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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/701,251

11/03/2003

Grant M. Kloster

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6098

7590

01/10/2005

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EXAMINER

BREWSTER, WILLIAM M

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/701,251

Applicant(s)

KLOSTER ET AL.

Examiner

William M. Brewster

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 9-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 120204.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 1-8, 16-19 in the reply filed on 2 December 2004 is acknowledged.

Claims 9-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 2 December 2004.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 16-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Gallagher et al., US Publication No. 2002/0030297 A1.

Gallagher anticipates a method comprising:
in fig. 4, forming a dielectric layer 17 comprising a matrix material with a plurality of pores and porogen material within the pores;

Art Unit: 2823

forming a trench, with sidewalls 30, in the dielectric layer, p. 5, ¶ 49,
filling the trench with a conductive material, the filling being performed at a filling
temperature, p. 5, ¶ 51, and
removing at least some of the porogen material from at least some of the plurality of
pores, p. 4, ¶ 40.

limitations from claim 2, the method wherein removing at least some of the
porogen material comprises thermally decomposing at least some of the porogen
material, p. 4, ¶ 40;

limitations from claim 3, the method further comprising depositing a thin film 45 at
a deposition temperature, electrolytic deposition, p. 4, ¶ 40;

limitations from claim 6, the method wherein the porogen material has a thermal
decomposition temperature lower than a thermal decomposition temperature of
the matrix material, p. 4, ¶ 39;

limitations from claim 7, the method wherein the porogen material has a thermal
decomposition temperature higher than 300 degrees Celsius, p. 4, ¶ 39;

limitations from claims 8, 18, the method, wherein the porogen material
comprises at least one of polyethylene terephthalate, polyamide-6,6, syndiotactic
polystyrene, polycaprolactone, polypropylene oxide, polycarbonate,
polyphenylene sulfide, polyamideimide, polyphthalamide, polymethylstyrene,
polyethereetherketone, polyether sulfone, polyetherketone, polyoxymethylene,
polybutylene terephthalate, and polystyrene, p. 2-3, ¶ 27;

limitations from claim 19, the method of claim 18 wherein the matrix material comprises at least one of cross-linked polyphenylene, polyaryl ether, polystyrene, crosslinked polyarylene, polymethylmethacrylate, aromatic polycarbonate, aromatic polyimide, methyl silsesquioxane, and hydrogen silsesquioxane, p. 3, ¶ 30.

Although Gallagher does not specify the deposition temperature for electrolytic deposition of copper, it is inherently low. Proffered as evidence is Kishida teaches electrolytic deposition of copper at 20°C, col. 5, lines 4-11,

limitations from claim 4, the method wherein the porogen material has a thermal decomposition temperature, Gallagher, p. 4, ¶ 39; higher than the deposition temperature, Gallagher electrolytic deposition, p. 4, ¶ 40;

limitations from claim 5, the method of claim 4 wherein the deposition temperature is about 300 degrees Celsius or lower, Kishida specifying electrolytic deposition of copper at 20°C, col. 5, lines 4-11.

limitations from claim 17, the method wherein the porogen material has a thermal decomposition temperature, Gallagher, p. 4, ¶ 39; higher than the filling temperature, Kishida specifying electrolytic deposition of copper at 20°C,

Gallagher electrolytic deposition, p. 4, ¶ 40; and lower than a thermal decomposition temperature of the matrix material, Gallagher, p. 4, ¶ 39.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William M. Brewster whose telephone number is 571-272-1854. The examiner can normally be reached on Full Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

William M. Brewster

5 January 2005
WB